modern views on beauty of the female form, occupy the next section.

The average weight of the new-born infant, the greater decrease in weight during the first few days of the male than the female, and of the first-born than the children of multiparæ, along with the subsequent daily increase, is given accurately and in an interesting and comprehensible style.

Although adopting weight *faute de mieux* as a method of comparing brains, the fact that the intellectual qualities of that organ do not vary directly with its mass is recognised, and illustrated by reference to individual cases. Unfortunately, when comparing the results of various observers, no statement is made as to which, if any, membranes are included with the nervous substance.

The book, admirably adapted for students acquainted with anthropometric methods, comprising many original observations, deals mainly with measurements and weights. The absence of instruction as to how they are obtained, detracts from its value to beginners; while the pathological and anatomical details scarcely recommend it for popular instruction.

*Beschreibung der Hauptmethoden, welche bei der Bestimmung der Verbrennungswärme üblich sind.* By W. Longuinine. Pp. 112, with 4 copper-plates and 21 figures. (Berlin: R. Friedländer und Sohn, 1897.)

THIS excellent work had already been printed in Russian when Berthelot's "Traité pratique de Calorimétrie chimique" appeared. The German translation may, however, be welcomed, because its scope differs considerably from that of Berthelot's book. The estimation of heat of combustion is alone dealt with by Longuinine, the rest of thermo-chemistry being left untouched. One of the results of discussing only a part of a subject is that, as far as it goes, this book is remarkably complete. Besides a full description of the calorimetric bomb and the precautions to be observed in its use, an account is given of the older methods of estimating the heat of combustion, which are still used to some extent, owing to the high price of Berthelot's bomb. Under certain conditions, duly set forth in the text, these old methods give exact results. The illustrations are capital, though unfortunately not drawn to scale, and the whole volume is handsome. By some strange mischance, it is not furnished with either an index or a table of contents.

*Cheltenham as a Holiday Resort.* Part I. *The Neighbouring Hill-Country.* By S. S. Buckman, F.G.S. Pp. 100. (Cheltenham: Norman, Sawyer, and Co., 1897.)

THE geology and archæology of Cheltenham and the neighbourhood are described in this book in a way which will induce the reader to make further inquiries into the why and the wherefore of the interesting characteristics referred to. The book will add to the enjoyment of ramblers in the country around Cheltenham, and will be of special value to those who visit the district in search of scientific information. The author has himself made investigations of Cotteswold geology, and his book contains the results of original observations as well as references to the work of others.

*Nature's Diary.* Compiled by Francis H. Allen. Eight photogravures. (London: Gay and Bird).

ON the left-hand pages are literary extracts, chiefly from Thoreau; on the right, blank paper for the events of the natural year, with here and there a printed note. The naturalist who uses the book must give it all its value. He would do much better to buy a note-book and a copy of Thoreau's "Walden." This is a book for show and not for use. The eight photographs from nature are capital. L. C. M.

## LETTERS TO THE EDITOR

*[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.]*

### Protective- and Pseudo-Mimicry.

I HAVE just been reading the presidential address to the Entomological Society on the subject of mimicry, and one or two statements with regard to mimicry among the *Heterocera* seem to me to stand in need of correction. It is stated on the authority of Colonel Swinhoe that *Teracolus etrida* is accurately mimicked by the geometer *Abraxas etridoides*, and that this supports his contention that the species of *Teracolus* are protected.

I described *Abraxas etridoides* from a single specimen taken on the Palni Hills, South India, by M. Elwes, pointing out its resemblance to the *Teracolus*, which also occurs in South India. This was quite enough for such an ardent student of mimicry as Colonel Swinhoe to base the above statement on, without knowing any more of the species, and probably without ever having seen it, the type being in a private collection. I have, however, lately received more specimens, and been able to learn its habits from collectors on the Palnis, where it rests in damp woods during the day on the plateau, as is the habit of the genus, whilst the *Teracolus* does not occur on the hills, but flies in the hot sun of the plains 6000 feet below; the fact being that all the species of the genus *Abraxas* secrete acrid juices and are distasteful, whilst *Teracolus* is not protected.

Again, it is stated that Danaid butterflies are mimicked by three genera of the *Chalcosia* group of *Zygænidæ*. These again secrete strong acrid juices, as does the whole family to which they belong, and they are so distasteful that hardly any other animal will touch them; their habits, too, are extremely different from those of butterflies, and no one who knows them in life could possibly believe in protective mimicry between the two groups. The *Chalcosias* sit about on tree trunks, but are very easily disturbed, when they fly with an extremely wavering flight for a short distance and then settle again. The only exception in this habit known to me is the Papilio-shaped genus *Histia*, which flies high over forest trees backwards and forwards with wavering flight, resembling that of the Vapourer Moth in our London squares, and looking so unlike butterflies that not even the veriest tyro could mistake them, besides being about one-third the size of any *Papilio*. Both these cases, therefore, will, I think, have to be relegated to the rapidly swelling ranks of museum-made mimicry.

Protective mimicry entirely depends on community of habit, and it used to be considered that accurate field observations were necessary to establish it. Now that it has been degraded to the matching of specimens in a drawer like ribbons in a shop, being a nice easy subject to philosophise on and entailing a minimum of work, it has lost all claim to serious consideration.

February 8. G. F. HAMPSON.

### Oat Smut as an Artist's Pigment.

THE deep brown or sepia-coloured spore dust often seen on cereals, and arising from the presence of a fungoid growth, is sufficiently rich in colour to become useful as a pigment for the artist. The colour obtained from smutty oats, for example, is of a deep rich umber shade, sometimes approaching to sepia in tone. Satisfactory experiments were made regarding its fastness to light and atmospheric influences. Specimens of the pigment painted on paper as a water-colour were exposed to direct sunlight for several months; and after this rather severe trial, they were compared with unexposed duplicate specimens. Little change in the appearance of the colours was apparent. With mild diffused daylight—such as that of an ordinary, well-illumined room—the colour remains quite fast and unaltered. Experiments were made on a small scale with oat smut pigment, and the results seemed highly satisfactory. Several grams of the dry spore dust were collected from smutty oats, and it was found that twelve heads of such oats yielded six grams of the brownish-black dust. This powder, being of a dry and light nature, had first to be moistened with a few drops of alcohol, then mixed with gum and water to form a water-colour pigment. In its deepest tones it is of a fine sepia shade, deepening to a brown-black. On diluting with water or Chinese

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white, pleasing tints of a flat brown, of the pheasant-egg cast, are obtained. This colour has met with approval among artist friends to whom it was shown.

The beauty of colour and fastness to light of this pigment, from such an unpromising material, may be of interest to artists' colourmen. DAVID PATERSON.

Leabank, Rosslyn, Midlothian.

### Early Spring Flowers.

YOUR readers will doubtless have been observing how the mildness of the weather this winter, so far, has hastened on the spring flowers. I am inclined to think that some of the dates mentioned below have not often been paralleled. The dates in brackets, of the usual flowering times, have been taken from Babington's "Manual of Botany" and Johnson's "Gardeners' Dictionary." December 10, 1897, *Helleborus fœtidus* (February); December 23, 1897, *Eranthis hyemalis* (February, March); December 31, 1897, *Iris histrio* (December to March); January 14, 1898, *Mercurialis perennis*, ♂ (April and May); January 14, *Corylus avellana*, ♂; January 29, ♀ (March, April); January 15, *Galanthus nivalis* (February); January 19, *Anemone hepatica* (March, April); January 20, *Anemone fulgens* (February 20, 1897), (March, April); January 20, *Ranunculus Ficaria* (February 20, 1897), (April, May); January 20, *Viola odorata*, wild (March, April); January 21, *Iris histrioides* (March); January 21, *Tussilago Farfara* (February 20, 1897), (March, April); January 21, *Berberis Aquifolium* (April); January 22, *Potentilla Fragariastrum* (April, May); January 24, *Primula vulgaris*, wild (March to May); January 24, *Crocus aureus* (February); January 26, *Omphalodes verna* (March); January 29, *Aucuba japonica*, ♂ (June). On the ♀ plant there is no sign of flower yet, and the berries have just turned red. January 29, *Ulmus surculosa* (February 21, 1897), (March to May); January 29, *Daphne Laureola* (February, March); January 29, *Arabis albida* (February 21, 1897), (February). Among other plants which began to flower in November, and have gone on until now with unusual luxuriance, we have noted *Garrya elliptica*, ♂ (just over), *Viburnum Tinus*, *Petasites fragrans*, *Lonicera fragrantissima*, *Ionopsidium acaule*, *Erica carnea*, garden violets, and primroses, single and double, and forget-me-not. I may add that on December 1, 1897, in the course of an hour, in and around the garden here, I noted upwards of 120 different kinds of plants in flower. A few were winter flowers, but most of them were belated summer and autumn ones.

Aphides are feeding on young rose and iris leaves, and slugs are playing havoc with young shoots of herbaceous and alpine plants.

A young rabbit was seen ten days ago in Devonshire, and in Gloucestershire a nest containing eggs of the blackbird and one of the robin with eggs were found about the same time.

Dadnor, Herefordshire, January 31. E. ARMITAGE.

### Insusceptibility of Insects to Poisons.

IN your review of "Notes of a Naturalist and Antiquary" in the issue of November 18, it is said that the caterpillar of the Spurge Hawk Moth "feeds exclusively on the Sea Spurge, although the plant secretes an acrid juice 'so painfully poisonous that it is difficult to imagine a digestive apparatus competent to deal with it.'"

This recalls to me a case, which came under my notice some years ago, in which a druggist had prepared a quantity of poisoned wheat for killing sparrows, then lately introduced here and a great nuisance, by soaking it in a solution of strychnine coloured with magenta. He found that on keeping it for some time in cardboard boxes it became infested with weevils; so I examined it to find if it really contained the alkaloid. The boxes were full of weevils and their excrement, and the wheat was more than half of it eaten. Strychnine was present in the wheat in the weevils, and in apparently larger proportion in the excrement, so that it had evidently passed through the digestive apparatus unchanged. WILL. A. DIXON.

Sydney, December 31, 1897.

MR. DIXON'S letter supplies a further illustration of the curious fact that certain insect larvæ are able to feed upon poisonous plants with impunity, and can pass through their digestive system an amount of poison sufficient to kill many a more highly organised being. It is perhaps owing to their being less highly organised that they are not susceptible to the poison. Although various instances in support of the fact have been placed on record, I have not met with any attempted explanation.

M. Félix Plateau, in a paper on the phenomena of digestion in insects, published in the *Mémoires de l'Académie Royale de Belgique* (tome xii.), an abstract of which may be found in the *Annals and Magazine of Natural History* (ser. 4, vol. xvi.), has remarked that some substances resist the digestive action and are passed with the excrement—as in the case of the weevils examined by Mr. Dixon. Such, he says, are the chitine of the integuments of insects, vegetable cellulose, and chlorophyll, which by the aid of the micro-spectroscope may be detected at all parts of the alimentary tube of herbivorous insects; but he says nothing of the effects of poison.

Dr. T. R. Fraser has shown (*Ann. and Mag. Nat. Hist.*, ser. 3, vol. xiii.), that the caterpillar of *Deiopeia pulchella* feeds on the virulent poison contained in the kernel of the seed of *Physostigma venenosum*, and is unaffected by the poisonous principle of the kernel—"eserinia." Yet he ascertained by experiment that the caterpillars subjected in various ways to the action of hydrocyanic acid quickly died, proving that this species possesses no universal panacea against all poisons.

Curious to relate, another insect, a weevil *Anthonomus druparum*, feeds with impunity on the very poison which is fatal to the last-mentioned insect, namely on the kernel of *Prunus cerasus*, the poisonous properties of which depend on the hydrocyanic acid it contains. It appears, therefore, that what is one insect's food is another insect's poison, and *vice versâ*. The subject offers a fine field for investigation, and the results of further experiments, if made known, would be of interest to many besides professed entomologists.

THE REVIEWER.

### Variation of Water-Level under Wind-Pressure.

IN confirmation of Mr. Wheeler's observations as to the variation of water-level under wind-pressure, two interesting beaches in the Great West Bay may be cited.

At the Chesil Bank (where all forces combine to raise the water-level) a height of 42 feet 9 inches above normal spring tide, high-water, is the height of the shingle-barrier raised by winds, waves, and currents to bar their own progress. Within the same bay, in the minor inlet of Torbay, the beach at Goodrington Sands (exposed to an easterly drift of more than 200 miles, and to waves exceeding 300 feet from crest to crest) rises 5 feet above the mark of fine weather spring tides; and this low bank is, or was when I saw it in 1889, the sole barrier between a grass field and the English Channel. The explanation clearly is that the harder it blows from the east, the more the level of the English Channel is lowered and the waters of Torbay with it.

Torquay, February 4. A. R. HUNT.

### Bipedal Lizards.

MY correspondent, Mr. H. Prestoe, has taken the trouble to examine the collections at the Natural History Museum, and by so doing has identified the bipedally-running Diamond Lizard of Trinidad, referred to in my last week's communication, with the *Ameiva surinamensis* of Gray. This identification is of additional interest, since it associates the faculty and habit of bipedal locomotion with yet a third family group of the lizard tribe, namely, that of the Teiidæ.

A good illustration of the species under notice, in a state of repose, is given in vol. v. of Lydekker's "Royal Natural History." W. SAVILLE-KENT.

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## THE TOTAL ECLIPSE OF THE SUN.

THE first Indian mail dispatched after the total eclipse of January 22 has now arrived, and it brings a number of details of the work done and results obtained during the two minutes of totality. It is therefore now possible to supplement the information derived from cablegrams already published in NATURE (January 27, p. 294) with extracts from the reports of the various eclipse parties. The Government of India appears to have rendered assistance to all the observers, and it has earned the gratitude of men of science

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